BROOKHAVEN NATIONAL LABORATORY Safety & Health Services Division **INDUSTRIAL HYGIENE GROUP** Standard Operating Procedure: Program Procedure	NUMBER **IH60300**
	REVISION **FINAL rev 0**
SUBJECT: # Chain of Custody Policy and Procedure	DATE **03/08/01**
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1.0 Purpose & Scope

This document describes a *Chain of Custody (COC)* procedure for receiving filters, sorbent tubes, bulk samples, surface wipes and other Industrial Hygiene samples for on and off site analysis. It is based on steps described in NIOSH Manual of Analytical Methods, 4th Edition and the OSHA Technical Manual, Chapter 4. It does not cover biological sample collection (i.e. urine, blood, and other medical surveillance techniques) that is administered by OMC protocol.

The goal of the procedure is to provide a uniform methodology/protocol to preserve the integrity of collected samples to prevent intentional or unintentional alteration by persons not responsible for the collection, processing or analysis of the samples. When sample integrity is maintained and documented from collection through analysis, analytical results can be used with confidence.

2.0 Responsibilities

2.1 **Program Administration:** This procedure is administered through the SHSD Industrial Hygiene Group. Members of the SHSD Industrial Hygiene Group, the Radiation Control Division Facility Support Group, Plant Engineering, and other BNL ESH&Q related organizations that submit sample to the IH Group lab are required to follow this procedure.

2.2 **Sample Custodian:** Only persons of the Industrial Hygiene Group who have demonstrated competency in this procedure, in accordance with Section 4, are authorized and allowed to receive samples.

2.3 **Sample Submitter:** The *Sample Collector* and *Sample Submitter* are responsible for the integrity of the sample until the sample has been properly transferred to the IH Group.

3.0 Definitions

3.1 ***Program Administrator:*** A person designated by the IH Group Leader or SHSD management to administer this procedure and associated sampling data management.

3.2 ***Sample Collector****:* A person who collects a bulk sample, set-ups air monitoring pumps, performs a wipe sample, or otherwise creates a sample that will be processed by the IH Group COC. See section 4 for qualification requirements.

3.3 ***Sample Custodian****:* A person who has demonstrated competency, in accordance with Section 4, to receive samples and ensure compliance with this procedure in the handling of samples in the Industrial Hygiene laboratory.

3.4 ***Sample Submitter****:* A person who brings a sample to the IH Group for analysis. This person shall be instructed in the necessary steps to correctly submit the samples by the IH Group *Sample* Custodian at the time samples are submitted and in other BNL IH procedure training as appropriate.

4.0 Prerequisites

4.1 **Qualification Criteria:** Only individuals who have demonstrated knowledge of this procedure to the satisfaction of the IH Group Leader, Exposure Monitoring Program Administrator, or their designee will be qualified to perform in the role of *Sample Custodian* and be allowed to receive samples and initiate the COC protocol. The qualification criteria to perform the role *of Sample Custodian* are demonstrated competency in receiving samples via:

4.1.1 Specific knowledge of this procedure shown by an ability to answer questions on the sampling *Chain of Custody* protocol.

4.1.2 Visual observation of a simulated sample receipt.

4.2 **Qualification Frequency & Recordkeeping for *Sample Custodians*:** The IH Group Leader, Program Administrator, or their designee will maintain a record of personnel who have passed the competency test for *Sample Custodian*.

4.2.1 Personnel shall be re-qualified at a frequency not to exceed three years.

4.2.2 If a person has not received samples for a period of over 1-year from the date of last qualification, a demonstration of competency to perform this procedure to the satisfaction of the IH Group Leader or *Program Administrator* will be required before returning to the role of *Sample Custodian*.

4.2.3 If significant and substantive changes to the procedure are made, all qualified *Sample Custodians* will be notified of the changes.

4.3 **Qualification Criteria for *Sample Collector*:** To perform this role, the person must be knowledgeable in the particular sampling method being used to collect the samples (including monitoring technique, interim sample storage requirements, limitations of the sampling procedure, and the importance of guardianship of the integrity of the sample). Qualification of a person to serve in this role is obtained by:

4.3.1 When available, formal qualification in written sampling procedures (such as surface wipe sampling) or

4.3.2 When formal certification is not available, by approval and qualification by the sampler's organizational supervision.

4.4 **Qualification Criteria for *Sample Submitter*:** To perform this role, the person must be knowledgeable in the particular sampling method interim sample storage requirements and the importance of guardianship of the integrity of the sample. Qualification of a person to serve in this role is obtained by:

4.4.1 When available, formal qualification in written sampling procedures (such as surface wipe sampling) or

4.4.2 When formal certification is not available, by approval and qualification by the sampler's organizational supervision.

5.0 Precautions

5.1 **Personal Protective Equipment:** The use of personal protective equipment to protect the *Sample Custodian* receiving the sample is not typically required, because the sample must be presented to the IH Group fully enclosed and in a manner that is free of contamination on the outer container.

5.1.1 If it is necessary for the *Sample Custodian* to handle a sample with potential surface contamination, at a minimum, disposable gloves must be used when contacting the exposed sampling media. The gloves must have sufficient impermeability to the surface contaminant to allow safe handling. All handling of contaminated containers must be done within a laboratory hood.

5.2 **Radiation Contamination:** It is possible that some areas where samples are taken may have radiation contamination as well as chemical contamination. The *Sample Custodian* must verify from the *Sample Submitter* that the samples have been analyzed for the radiation hazard and are at radiation contamination levels below the permissible release limits to the general public.

6.0 Procedure

6.1 **Equipment**

6.1.1 **Sample container for bulk samples** (either):

6.1.1.1 Bag, plastic, sealable with “zip” type seal.

6.1.1.2 Vial, glass or plastic.

6.1.2 **Sample label** (any of these):

6.1.2.1 Self Adhesive paper label.

6.1.2.2 Permanent marking with indelible pen directly on the sample container.

6.1.2.3 Adhesive marking tape on which permanent lettering can be made.

6.1.3 **COC protective storage zip lock bag:** (recommended is a 8 x 10 inch plastic zip lock bag or equivalent). When ready for shipment, the COC should be placed in the over-pack bag with the samples.

6.1.4 **Tamper evidence security tape**

6.1.5 **Sample Security Storage Box** or restricted access area such as the counter or refrigerator in a locked room.

6.2 **Preparation of Media:** Follow BNL IH Group written sample preparation procedures in preparing air/bulk sampling media and forms for sampling (Prior to sampling):

6.2.1 Record calibration information on "air sample forms".

6.2.2 Place the "air sample form" in a protective, zip-lock plastic bag and send the forms with the person transporting the media to the sampling location.

6.3 **Maintaining Sample integrity** while in the possession of the sampling organization

6.3.1 The *Sample Collector* is required to ensure that the proper sample forms are completed prior to sample collection. Sample forms should indicate the change in custody if the *Sample Collector* is not the person who transports the samples (*Sample Submitter*) to and from the Industrial Hygiene Group. The *Sample Collector* and *Sample* Submitters must maintain the sample within storage conditions established by the sampling method (e.g. refrigeration when required).

6.4 **Receiving Samples**

6.4.1 **Surface Contamination:** *Sample Custodian* verifies that the samples are submitted in a secure manner and are in an uncontaminated protective container. If not, reject the sample until the *Sample Submitter* rectifies the conditions of the sample.

In the event the integrity of the sample container is questioned, the *Sample Custodian* will assume the containers are contaminated, close the outer package, record this on the data sheet, place in a fume hood (with warning sign) and notify the sample collector. The sample collector will determine if

the samples are to be decontaminated and repackaged for analysis or discarded.

6.4.2 **Reviewing Sample Documentation:** *Sample Custodian* reviews the air or bulk sampling forms and verifies that the information recorded is complete and meaningful (including sample location information, method used, names of sampler, and date of sampling). If the forms are not properly completed, the *Sample Custodian* must reject the samples until the appropriate information is obtained and recorded.

6.4.3 **Assigning sample number(s):** *Sample Custodian* observes the sample identification numbers assigned by the sampler on the containers and verifies that they match the identification on the sample form.

6.4.3.1 If they do not match, the *Sample Submitter* must rectify the sample numbers. If the sample identification cannot be rectified, the *Sample Custodian* must reject the samples.

6.4.3.2 *Sample Custodian* verifies or adds the IH Group sample identification to the sample containers and the sample form. The correct numbering pattern is: BLDG#-MM-DD-YY-unique number.

6.5 **Completing the Chain of Custody:** The *Sample Submitter* completes the BNL IH Group COC form in the presence of the *Sample Custodian*. The *Sample Submitter* must record each sample identification number, chemical to be tested, and then sign and date the form.

6.5.1 The *Sample Custodian* then ensures that the balance of the form, including the analysis method, identification number and the priority status of the sample analysis are completed.

6.6 **Insuring the integrity of the samples within the IH Group Laboratory:**

6.6.1 Once released by the *Sample Submitter*, the *Sample Custodian* must store the samples appropriately in a restricted storage location such as the locked sample receiving area or the *Sample Security Box* until processing is completed.

6.6.2 Samples must be stored in accordance with the method requirements. Some monitoring methods limit shelf life for samples. Process samples for shipment so that they received by the analytical laboratory with sufficient time for analysis. Protect the samples from light, refrigerated and follow other special handling requirements set up in the sampling and analytical method. Segregated bulk samples from air samples.

6.6.3 "Air samples" require post calibration to determine air volume sampled. The flow rates for air samples should be verified. If not within ten percent of the pre-sampling flow rate, reject the sample until evaluated by the *Sample Collector* to determine the need for further actions.

6.6.4 Additional notes may be necessary for proper lab analysis and should be recorded on the analytical laboratory chain of custody in the comments section. This might include: known interferences present during sampling; temperature or high/low humidity at the sample location; and that bulk liquid samples are sent in separate packages; etc.

6.7 **Completing the COC:** The *Sample Custodian* places the fully completed and signed BNL vendor Chain of Custody/Analysis Request Form, the *COC Instruction Sheet*, and the samples into a zip lock plastic bag (recommended size is 8 by 10 inches).

6.7.1 The plastic bag is sealed with "tamper evidence" tape.

6.7.2 The sealed bag is appropriately stored in a restricted storage area such as placed in the locked *Sample Security Box* (or refrigerator in locked or occupied room) until taken to the BNL shipping area.

6.7.3 In the event the Sample Submitter requires off-hours sample drop or the Sample Custodian is unavailable, samples must not be left unattended. Special provisions must be made with the Sample Custodian to ensure that ALL provisions of the procedure are followed in any transfer of samples that do not follow this SOP.

Note: The chain of custody history may be documented using several sequential forms. Examples are:

- The "air sampling form" or "bulk sampling form" record provided by the *Sample Submitter* that documents the transfer to the *Sample Collector*.
- The IH Group "COC form" that documents the transfer from the *Sample Submitter* to the *Sample Custodian.*
- A "vendor" COC record that documents the transfer from the *Sample Custodian* to the off-site analytical laboratory.

6.8 **Receipt of Analysis data:** A *Sample Custodian* verifies that the completed COC form or vendor supplied Chain of Custody/Analysis Request Form is returned signed and dated. If not, contact the laboratory to rectify the problem.

6.8.1 Before sending results to the sample collector, the *Sample Custodian* checks that signatures, correct analysis method, result concentration units, and BNL sample numbers are correct on the analysis form.

7.0 References

7.1 NIOSH Manual of Analytical Method, Fourth Edition, Introduction.

7.2 OSHA Technical Manual, Chapter 4.

8.0 Attachments

8.1 **Attachment 1:** BNL Chain of Custody Instruction Sheet

8.2 **Attachment 2:** BNL Chain of Custody Form

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9.0 **Documentation**

Document Review Tracking Sheet		
PREPARED BY: *(signature and date on file)* **R. Selvey** **Author** **Date 03/14/00 & 02/07/01**	**REVIEWED BY:** *(signature and date on file)* **R. Wilson** *(signature and date on file)* **J. Peters** **Date 02/07/01**	**APPROVED BY:** *(signature and date on file)* **R. Selvey** **Group Leader** **Date 02/09/01**
Filing Code: **IH52SR.01**	**DQAR** **Date**	**Effective Date:** **03/08/01**

Periodic Review Record		
Date of Review	Reviewer Signature and Date	Comments Attached
03/08/01	*(signature and date on file)* R. Selvey	Converted SOP number from IH-PP-3.0 to IH60300. Reviewed text, minor editorial changes.

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Chain of Custody Instruction Sheet

1) **Sample(s) were shipped in a completely intact plastic bag with tamper evidence tape over the zip lock closure.**

2) **Carefully observe the outer plastic bag that the samples are shipped in. Check for signs of tampering. Signs are:**
   - **"tamper-vue®" evidence tape is not present**
   - **"tamper-vue®" evidence tape has been disturbed (reads "opened")**
   - **plastic bag is not 100% intact:**
     - **cut marks**
     - **Seams opened**
     - **other signs that the bags have been opened**

3) **If any signs of tampering with packaging is detected,**
   a) **<u>Stop</u> further processing of the samples**

   b) **Call BNL at (631) 344-3900 or (631) 344-3066 and inform the person answering the phone of the tampering (If no one answers, leave a message indicating the problem and the identity of the samples).**

   c) **Save the material in the state received.**

   d) **Contact BNL for instruction on returning the samples.**

   e) **Do not analyze samples that show evidence of tampering without the consent of the BNL IH Group via the phone numbers above.**

Thank you for your assistance in insuring the integrity of these samples.
Brookhaven National Laboratory- Industrial Hygiene Group

BROOKHAVEN NATIONAL LABORATORY
Safety and Environmental Protection Division
INDUSTRIAL HYGIENE GROUP

CHAIN OF CUSTODY

CC#:

CC Date:

To:	PO#:	Shipper#:
		Shipping Date:

Relinquished to IH Lab by: (Sample Submitter's Name and Signature)	**Date:**	**Time:**	**Received in the IH Lab by:** (Sample Custodian's Name and Signature)	**Field Sample Number(s)**	**Analyze For:** Analyte(s) Name & Method Number	**Priority** 1= 24 hr 2= Normal	Air Samples only	
							IH Job#	Air Vol. (L)

Relinquished By BNL: (Signature)	Date:	Time:	Received By: (Signature)	Date:	Time:
			Name:		
			Organization:		